

REMARKS

Claims 1-6 are pending. By this Amendment, the specification and claims 1 and 2 are amended. Claim 1 is amended to clarify the differentiation between the projections of the armature core and the belt-like pressed anchoring portion. Claim 2 is amended to correct a minor grammatical error. Claim 6 is withdrawn from consideration as being directed to a non-elected invention. The attached Appendix includes a marked-up copy of each rewritten paragraph (37 .F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

Entry of the amendments is proper under 37 C.F.R. §1.116 since the amendments: 1) place the application in condition for allowance for the reasons discussed herein; 2) do not raise any new issues requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; and 3) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

Applicants respectfully submit that claim 6 is not directed to an invention that is independent or distinct from the invention originally claimed. The Office Action alleges that the inventions are distinct because the product, as claimed, can be made by another a materially different process. Specifically, the Office Action alleges the anchoring portion can be made by cutting the laminations of the central portion of the armature to leave only two laminations acting as the anchors, at the ends of the armature. Applicants respectfully submit that such is an incorrect understanding of the anchoring portion as claimed. Rather, the anchoring portion, as recited in the claims, pertains to the belt-like pressed portion 22 that anchors parts of the in-slot portions 40, 50 of conductor segments 4 and 5 to the armature core 2 more strongly than the rest of the in-slot portions (page 8, lines 2-6 of the specification). The pressed portion 22 is formed in a belt that is as wide as a few laminated sheets, or about 3 mm, on a portion of the armature core 2 at a space corresponding to at least

a laminated sheet from the end of the armature core 2 adjacent to the commutator 31.

However, the pressed portion 22 can be located in a half length of the armature core 2 from the end adjacent to the commutator 31 (page 8, lines 20-26).

In contrast, the claw-shaped projections are bent to prevent the in-slot portions 40 and 50 from flying off of the slots 20 (see Fig. 2 of the specification). In Figs. 1-3 it is clear that the pressed portion 22 is distinct from the claw-shaped projection 21 and could not be formed by cutting the laminations of the central portion of the armature to leave only two laminations acting as the anchors at the ends of the armature, as alleged in the Office Action. Therefore, Applicants respectfully submit that claim 6 is not an independent or distinct invention from the originally claimed invention. As such, withdrawal of the Restriction is requested. Accordingly, Applicants respectfully request rejoinder, examination, and allowance of claim 6.

The Office Action rejects claim 1 under 35 U.S.C. §103(a) as unpatentable over European Patent Application EP 0 863 600 to Matsushita et al. (hereinafter "Matsushita"). The rejection is respectfully traversed.

The Office Action admits that Matsushita does not disclose an anchoring portion formed by pressing. However, the Office Action asserts that no patentable weight has been given to the method of manufacturing, i.e., formed by pressing, because "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on product itself." Applicants submit that claim 1, as amended, does not recite a product-by-process claim and therefore the basis for rejection is moot.

Additionally, Applicants assert that Matsushita does not disclose or suggest an anchoring portion as recited in the claims. Rather, Matsushita discloses a flange 11 that prevents the windings from coming out of the core even when the tip of the core is cut off to a large extent to ensure large cogging (col. 7, lines 18-24). As stated above, the function of retaining conductor

segments in the slots of the armature core in the instant application is accomplished by the claw-like projections 21 and not by the pressed portion. Rather the pressed portion anchors parts of the in-slot portions 40, 50 of conductor segments 4, 5 to the armature core more strongly than the rest of the in-slot portions (page 8, line 2-page 9, line 12 and Figs. 1-3). Accordingly, Applicants submit that Matsushita does not disclose or suggest an anchoring portion as recited in the claims. Therefore, Applicants respectfully request the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

Claims 2 and 3 are rejected under 35 U.S.C. §103(a) as unpatentable over Matsushita in view of U.S. Patent 4,616,151 to Prymak. The rejection is respectfully traversed.

Applicants submit that claims 2 and 3 are allowable for at least their dependency upon claim 1, as well as for the additional features recited therein. Additionally, the Office Action admits that Matsushita does not disclose the anchoring portion disposed at least at a space corresponding to one of the laminated sheets apart from the end adjacent to the commutator.

The Office Action alleges that Prymak discloses an anchoring portion 32 disposed at a distance less than half the length of the armature core 10 from an end thereof adjacent to the commutator and disposed at least at a space corresponding to one of the laminated sheets apart from the end adjacent to the commutator (using the commutator as viewed in Matsushita). However, like Matsushita, Prymak does not disclose an anchoring portion as recited in the claims. Rather, Prymak discloses a plurality of different lamination patterns where each lamination has for each pole, a radial body portion 30 with arms 32, 33 extending circumferentially in opposite directions from the outer end thereof (col. 3, lines 18-24 of Prymak). Accordingly, like Matsushita, Prymak merely discloses a feature of the lamination similar to that of the claw-like projection 21 and not the anchoring portion, as recited in the claims.

Further, there is no suggestion or motivation to combine the applied references because each of the applied reference address problems different from that of the instant application. Specifically, Matsushita addresses the problems of safety and motor burn out in miniature electric motors of the type used in model airplanes and electric fans by providing a self-inactivating function. In Prymak, the problem being addressed is the level of the audible noise in a DC motor caused by excitation of resonant case vibration. In contrast to both Matsushita and Prymak, the problem being solved in the instant application is that of unevenness in the commutator surface of the armature in a DC motor. As such, there is no motivation or suggestion to combine the applied references. Even were the applied references combined, the resulting device would not render the claims obvious because the resulting device would not solve the problems addressed by Applicants. Specifically, the resulting device would not provide an armature that has a flatter commutator surface. Thus, the claims are not rendered obvious by the combination of the applied references.

Claims 4 and 5 are rejected under 35 U.S.C. §103(a) as unpatentable over Matsushita in view of Japanese Patent Publication No. 62247736 to Akira. The rejection is respectfully traversed.

Applicants submit that claims 4 and 5 are allowable for at least their dependency on claim 1, as well as for the additional features recited therein. For example, the Office Action admits that Matsushita does not disclose that the pressed portion has an outside diameter less than that of the outside diameter of the rest of the armature core. To overcome the admitted deficiency the Office Action alleges that Akira discloses an anchoring portion that comprises a belt-like pressed portion of the armature core and that the pressed portion 3 has an outside diameter less than the outside diameter of the rest of the armature core 1.

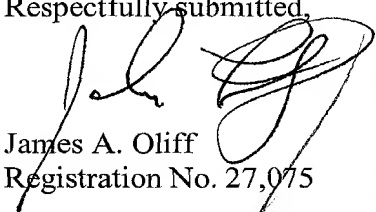
Applicants submit that, like Matsushita and Prymak, Akira merely discloses a feature that prevents the coil 2 from jumping out easily of the slot 1d. This function is performed by the

flange 1a that is similar to the claw-like projection portion 21 and not the anchoring portion, as recited in the claims. The English-language Abstract of Akira is silent as to providing a belt-like pressed portion or as to the relative diameters of any of the features of the device. Accordingly, Akira does not provide for the deficiencies of Matsushita. Accordingly, Applicants respectfully request the rejection of claims 3 and 4 under 35 U.S.C. §103(a) be withdrawn.

In view of the foregoing, reconsideration of the application is requested. It is submitted that the claims as presented herein patentably distinguish over the applied references and fully meet the requirements of 35 U.S.C. §112. Accordingly, allowance of claims 1-6 is respectfully solicited.

Should the Examiner believe anything further is desirable in order to place the application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,


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JAO:JWF/mmc

Attachment:
Appendix

Date: May 15, 2002

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<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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APPENDIX

Changes to Specification:

Page 1, lines 15-25:

2. Description of the Related Art

U.S.P. 5,739,617 or its corresponding Japanese Patent Application JP-A-9-51645 discloses an armature of a rotary electric machine. The armature has an integrated commutator at an end of an armature coil. Upper-layer conductor segments and a generally disk-like insulation spacer, which ~~s-is~~ made of a hard resinous material, are fitted to each other on the end of the armature adjacent a commutator so that axial position of the upper-layer conductor segments can be fixed. Therefore, the commutator surface in contact with the brush can be maintained flat.

Page 8, lines 2-6:

In summary, the armature core 2 has the projections 21 that retain the conductor segments 4 and 5 in the slots 20 and a pressed portion 22 that anchors parts of the in-slot portions 40, 50 of conductor segments 4 and 5 to the armature core 2 more strongly than the rest of the in-slot portions.

IN THE CLAIMS:

The following is a marked-up version of the amended claims 1 and 2:

1. (Twice Amended) An armature of a rotary electric machine comprising:
 - a rotary shaft;
 - an armature core composed of a plurality of laminated sheets through which said shaft is inserted and a plurality of slots and projections at the outer periphery thereof;
 - an armature coil composed of a plurality of conductor segments having in-slot portions being respectively inserted into said slots; and

a commutator formed by a portion of said armature coil to be integrated with
said armature coil at an end thereof;

_____ wherein said armature core comprises a belt-like pressed ~~an~~ anchoring portion
disposed at ~~formed by pressing~~ a portion of said laminated sheets near said commutator for
anchoring a part of each of said in-slot portions that correspond to said portion of said
laminated sheets to said armature core more strongly than other parts of said in-slot portions.

2. (Amended) The armature according to claim 2, wherein said anchoring
portion is disposed at least at a space corresponding to one of said laminated ~~sheet~~ sheets
apart from said end adjacent to said commutator.